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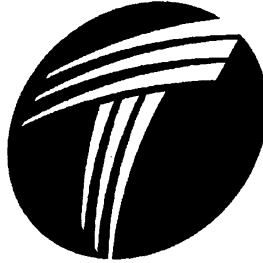
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College of Technology

**Analysis of Criteria Used to
Select Design Build Teams**

In partial fulfillment of the requirements for the
Degree of Master of Science in Technology

A Directed Project Report

By

Stephen Letsinger

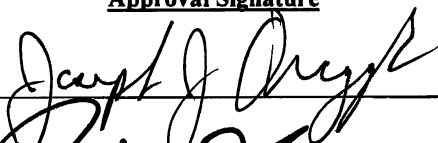
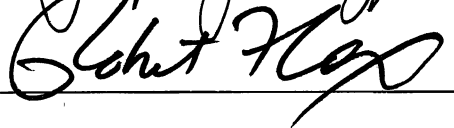

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Directed Project: Analysis of Criteria
Used to Select Design/Build Teams

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Abstract

Public procurement laws outline the rules and procedures used by public agencies to select design-build teams to work on their projects. However it is up to the individual project selection committees to develop the specific criterion used to select the best design-build team for their project. Design-build teams assemble their qualification and proposal packages using the criteria listed in the procurement documents to put their team in the best position to be awarded the contract. If the submittal requirements or selection criteria are vague and not well stated committee members may have to interpret the information supplied by the proposers. This interpretation could be clouded with personal bias contaminating the integrity of the selection process. If a more comprehensive list of selection criteria and supporting submittal requirements were available to selection committees, then the procurement documents could be drafted to better ensure that the packets submitted from each proposer will contain the necessary information to facilitate the evaluation of each of the criteria. This paper examined the submittal requirements and corresponding selection criteria from various types of public school design-build projects. This data was collected from school districts across the nation to identify a wide variety of selection criteria and supporting submittal requirements. This collection of information was then evaluated, organized, and published with this report to be used by selection committees when preparing the requirements for their projects.

Introduction

The potential for successful completion of any step in a sequential process relies on the successful completion of the previous step. This holds true in construction. Making good decisions during the early stages of a construction project is paramount for the success of the final project. Some of the characteristics of project success from an owner's point-of-view include shorter duration, reduced costs, innovation in design and reduced claims (Songer & Molenaar, 1996). Minimal aggravation, quality workmanship, meeting performance specifications, conforming to owner's expectations, on budget and on schedule were also identified in a later study as success criteria for public agencies (Songer & Molenaar, 1997). Seeking to capitalize on these success factors, public agencies are seeking alternatives to the traditional delivery method of Design-Bid-Build (DBB). One of the more popular alternative delivery methods is the Design-Build (DB) delivery method. DB offers a reduced delivery schedule, early cost establishment and the ease of working with one entity that delivers both the design and construction services for their project (Lopez del Puerto, Gransberg, & Shane, 2008).

Public bidding laws establish guidelines agencies must follow to select the DB team to work on their project. An early study of the procedures used by the United States Army Corps of Engineers (USACE) in their approach to a DB project yielded five conceptual phases that represent the sequential steps in the DB process. These phases are: (1) Identify Facilities for DB; (2) Perform Project Coordination; (3) Develop Request for Proposal; (4) Perform Proposal Evaluation and (5) Conduct Contract Administration. Any public agency that decides to use the DB delivery method will follow these steps through the course of their project (Songer, Ibbs, Garrett, Napier, & Stumpf, 1992) (Songer, Ibbs, & Napier, 1994).

Recognizing the benefits of the DB delivery method, many states have enacted legislation to allow public agencies to use this new delivery method. Each state has its own set of unique rules governing which projects are eligible to use the DB delivery method. Some states require that the agency receive approval from a central agency before they can proceed with DB and other states delegate the selection of the delivery method to the agency. Once the DB method has been chosen for a project the next phase is project coordination.

Project coordination includes the formation of a selection committee and selecting the design criteria developer (DCD). The DCD is responsible for preparing the design criteria package (some states refer to this as the performance criteria) that will be included in the request for proposal (RFP). Additional services offered by the DCD include preparing the request for qualifications (RFQ) and the RFP for the project and facilitate the evaluation process.

A Technical Review Committee (TRC) is assembled to select the DB team for the project. The TRC is responsible for developing the selection criteria, issuing the procurement documents, evaluating the submittals and scoring the criteria used to select the proposer best suited for their project. The three primary methods used by the TRC to select the proposer for their projects are: (1) One-step which does not require the pre-qualification of the teams before issuing the RFP, this method is often referred to as the “Best Value” selection method; (2) Two-step which includes an initial qualification stage to reduce the number of teams down to three to five qualified teams before issuing the RFP to the “short-list” of competitors; (3) Qualifications-based selection which selects the winning team based solely on their qualifications. There are advantages and disadvantages to each of these methods, but most states have adopted the two-step method to be consistent with the methods outlined in the 1996 Federal Acquisition and Reform Act (Molenaar, Songer, & Barash, 1999).

Statement of the Problem

The selection of the best proposer is essential to the success of the project. If the required submittals do not adequately support the evaluation of the criteria then this makes it more difficult to choose the best proposer possible. This puts the third phase of the DB delivery process, developing the procurement documents, critical to project success. The RFP is initially drafted by the DCD but reviewed, revised and approved for distribution by the TRC. This is the time-frame when the TRC formulates their selection strategy and priorities. Committee members that do not have construction backgrounds may be unfamiliar with the details specific to selecting design or construction professionals. These individuals will defer to the DCD and the other committee members that have construction experience when approving the procurement documents. However, due to the subjective nature of some of the selection criteria, members of the TRC can interpret the supporting documentation supplied by the proposers from different points of view. If, during the evaluation period, an individual member finds the supporting documentation inadequate to develop a score for specific criteria it is too late to request additional information. To solve this problem, some agencies allow an opportunity for the TRC to interview select proposers prior to finalizing their selection. However, these interviews take time and could potential introduce personal bias simply based on the personal interactions between the members of the committee and a proposer. Ill-informed decisions and personal bias are two distractions from the selection process that need to be kept at a minimum.

Significance of the Problem

The school construction market represents a large segment of the construction industry. In 2008 over nineteen billion dollars were spent nationally either building new schools or renovating and adding space to existing facilities (Abramson, 2009). A study of school projects

showed that owners are frustrated with the traditional DBB delivery method because they are required to use the lowest bidder which is not always the best qualified company. Poor quality construction and errors in the construction documents are also sources of litigation on a project which negatively impacts the project budget and the overall satisfaction with the construction process (Schaufelberger, 2000). A comparison between three different types of delivery systems used in private industry; DB, design-bid-build (DBB), construction management at risk (CM@R) concluded that DB outperformed the other two methods in either cost or project delivery time (Konchar & Sanvido, 1998). Taking notice of the successful use of DB in private industry, public agencies began exploring DB as an alternative delivery method. The steady increase in the dollar volume of projects using the DB delivery method from 2004 to 2008 indicates that DB is becoming a more popular delivery method see Figure 1 (DBIA).

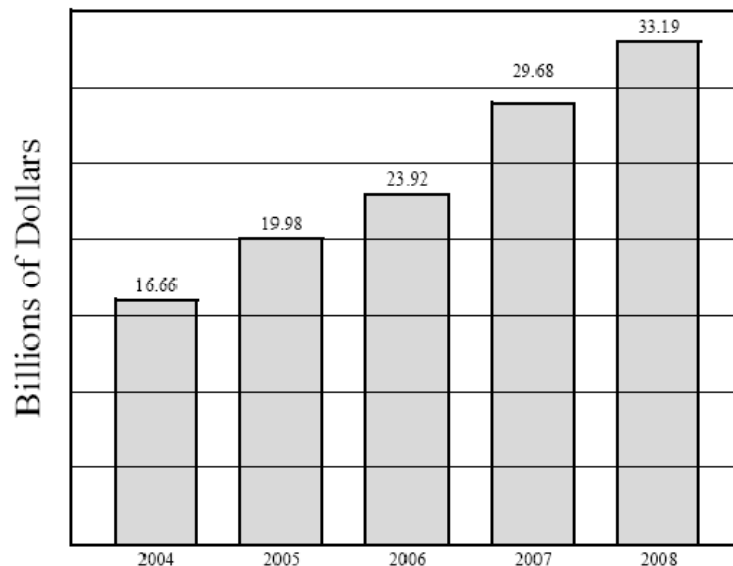


Figure 1. Annual Revenue Spent on Design Build Projects (DBIA). This figure shows increasing revenue between 2004 and 2008.

The challenge for selection committees is to assign a quantitative score to a list of mostly subjective criteria for each proposer. This is a manageable task for large public agencies like the United States Army Corps of Engineers (USACE) because they have a staff of construction professionals experienced in selecting design and construction professionals. However most school corporations do not have in-house construction resources and there are large gaps of time between projects so there is a learning curve involved with every project.

Public bidding laws were enacted as a measure to limit the influence of personal bias from the process used to select the contractors for a project. Subjective criteria elements can be used by committee members motivated by personal bias to manipulate the scoring process in order to satisfy a hidden agenda. One example of how personal bias can influence the selection process can be found in the impact that the Written Composite Score (WCS) has on the Adjusted Price (AP) for DB projects located in Indiana. An example of the formula used to develop the adjusted price is: $\text{Price Proposal (PP)} / \text{Written Composite Score (WCS)} = \text{Adjusted Price (AP)}$. The adjusted price is inversely proportional to the WCS, which can only be offset by submitting a lower cost proposal that exceeds the percentage difference between the WCS. An example of the magnitude of the impact can be seen in Table 1.

Table 1

The Effects of Written Composite Score on the Price Proposal

Team	Written Composite Score	Price Proposal	Adjusted Price	Proposal Difference to Overcome Difference in WCS
A	85	\$20,000,000	\$235,294	\$0
B	80	\$18,823,440	\$235,293	\$1,176,560

The price proposal for team B was derived by subtracting one dollar from team A's adjusted price and multiplying it by the written composite score received by team B. For team B to be competitive their price proposal must be more than a million dollars less than their competitor yet their scores only varied by five points. This example shows that if the WCS can be manipulated to favor one team over another then personal bias can influence the team selection process.

Statement of Purpose

Aim

An analysis was performed on selection criteria listed in procurement documents for public school DB projects. The end goal of this study was to develop a guideline which lists the evaluation criteria and corresponding submittal requirements for selection committees to use when preparing the procurement documents for their project.

Objectives

The first activity was to assemble a collection of selection criteria to be analyzed. Because the deliverables prepared and submitted by the proposers were used to determine the final ranking of the proposers, the submittal requirements were also collected for this study. RFQs and RFPs for public K12 projects from different school districts located across the country were used to collect submittal requirements, selection criteria and other miscellaneous project information. The submittal requirements and selection criteria were then cross-referenced and analyzed. Finally the information was organized in a simple format for selection committees to use as a guide for future projects.

Definitions

Design Criteria Developer (DCD) – Is usually an independent party hired as a consultant for the public agency. If an agency is large enough they may utilize a current member of their staff. Most statutes require that the DCD be either a registered architect or professional engineer.

Technical Review Committee (TRC) – A committee assembled to select a DB team for their project. In public works projects the minimum requirements for the membership may or may not be established by state or local government rules. Typically the DCD is a key member of the TRC because they guide the TRC through the selection process. Other members will include representatives from the school district administration, staff members from the facility, design and construction professionals and select members from the local community.

Request for Qualifications (RFQ) –Is the first step in the two-step selection method. It is used by the owner to reduce (“short-list”) the number of qualified design build teams to a manageable number of three to five.

Request for Proposal (RFP) – Is used to communicate the project requirements, team selection procedures and submittal requirements to the design build teams. The RFP is used in both the one and two-step selection methods.

Proposer – Design build entities in competition for the award of the DB contract. The proposers can either be a single company with in-house design and construction capabilities or a joint venture between design companies and contractors.

K-12 – Public school corporations that are responsible for the construction and maintenance of elementary, middle and high schools. Support facilities such as administrative buildings and athletic facilities would also be included in this category.

Project Types: A listing of different types of projects which include: new buildings, additions and renovations, electrical, plumbing, fire protection, HVAC or technology improvements or general site improvements.

Facility Types: A listing of the different types and configurations of facilities commonly found in public school districts. Examples of facility types include: elementary schools, middle schools, high schools, athletic facilities, administrative and support facilities. Facilities can also be a combination of facility types. For instance a Pre-K through 8th grade building combines the functions of a middle school with an elementary school. Similarly a K-12 type facility incorporates the functions of an elementary, middle school and high school under one roof.

Delphi Method – “a method for structuring group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with complex problems.”

(Manoliadis, Pantouvakis, & Christodoulou, 2009)

Fuzzy Set Theory – “a useful tool for dealing with multi-criteria decision making taking into account uncertainty in the interpretation of alternatives.” (Manoliadis, Pantouvakis, & Christodoulou, 2009)

Assumptions

It has to be assumed for this study to be valid that the first two phases of the DB process were successfully completed. In essence, the chosen delivery method for the projects used in this study is Design/Build and that the Design Criteria Developer and membership of the Technical Review Committee were properly selected. Additionally, the criteria developed and published in the procurements documents used in this study accurately represented the priorities of the selection committees.

Delimitations

This paper will limit the study to Design/Build projects in the public K-12 school construction market. This demographic was selected because committee members from the school corporations may not be familiar with some of the criterion used to evaluate proposers. This could potentially unbalance the scoring process. Similarly the members of the TRC with construction backgrounds may not have experience with the best designs that enhance the educational experience. Reducing the level of subjective analysis required of committee members during the evaluation process could only serve to level the playing field for the proposers competing for the project.

Limitations

Most committees will go through a series of discussions and negotiations before assigning the scores for each proposer's submissions. Details specific to individual rankings and the influence individual committee members had in the process were simply not available. These meetings are closed sessions and confidential information discussed in the meetings is typically not published for general public access. It was never in the scope of this paper to study group dynamics, but to develop a list of criteria with varying degrees of subjectivity that can be used by selection committees when preparing RFQs and RFPs for future projects. Even access to the final scores was found to be limited.

Another limitation was access to the experience level of the criteria developers that prepared each of the documents used in this study. An experienced DCD will structure the procurement documents to reflect lessons learned from previous projects. Not including this metric in the analysis of the selection criteria and subsequent submittal requirements assumes

that the experience level of all of the DCDs that worked on these projects is the same. Future studies of procurement documents should include this metric in their analysis.

Literature Review

The review of the literature related to this paper was conducted in three parts. The first part of the review looked at the different categories of selection criteria found in procurement documents. The next step defined a method that was used to determine if criteria is subjective. The last section reviewed literature related to methods, tools and practices used to prequalify DB project teams and score criteria.

Primary Categories of Selection Criteria

There are five basic categories of questions found in either RFPs or RFQs. These are:

- Price: Includes all elements of project cost.
- Technical: Includes all submission criteria relating to the design approach to the project.
- Qualifications: These criteria relate the experience of the companies involved and other metrics that would indicate which team that is best qualified for this project.
- Schedule: Any criteria that related to dates or project duration would be included in this category.
- Project Management: These items indicate the team's approach to the management of both the design and construction phases of the project. Elements of quality control, subcontractors to be used, project safety and any temporary facility requirements for the project would be included in this category.

These categories were used in a study of RFPs used by federal agencies to evaluate the level of importance of each of the criteria to the overall selection of the team. It was found that if price were equal to all other factors combined then the selection of the team would be based on a low-bid. Federal owners view qualifications and past performance as important criteria as long as the proposal is technically acceptable and has a competitive price. If the project is more technically challenging and requires innovation then the technical criteria should be weighted higher (Gransberg & Barton, 2007). A number of sub-categories were also found to be important in the selection process. For example, some of the criteria used by the United States Postal Service (USPS) to evaluate contractor qualifications include items such as:

- Project Experience which would include items like: (1) Experience as a team by project type; (2) Project management experience by project type; (3) Design experience by project type and (4) Construction experience by project type.
- Local Experience which includes: (1) Local experience as a team; (2) Local experience with codes and standards; (3) Local design experience and (4) Local construction experience.

Criteria Subjectivity

The parameters used to classify criteria as either subjective or objective needs to be defined before the data used in this study can be classified. Initially the level of subjectivity of a question would seem obvious but as each criteria used in this study is analyzed there is the potential that the lines between these two terms can become indistinguishable. To try and understand the nature of a subjective question, consider the following example: “What makes a drawing more than just its separate lines?” This is the type of question that will evoke several

different types of responses from individuals because their response is based on their personal definition of what constitutes a drawing. The answer to a “subjective” question is not based on real objects but on individual views of how things interact. Each individual responding to this question has a distinct set of thought patterns which has been developed over years of unique personal experiences (Minsky, 1985).

Establishing a List of Criteria

One approach to developing a list of criteria would be to follow a process discussed in a previous article. A Design/Build Prequalification System (DBPS) can be used to identify and weight the individual criteria used to select the best proposer (Potter & Sanvido, 1995). The first step to implementing a DBPS begins with developing a list of primary criteria. These criteria must be relevant to the method and stage of the design/build selection method. For example, if a TRC is working on an RFQ than there is really only one primary category which is Qualifications and the TRC can move on to develop a list of supporting criteria. However, if a TRC is preparing an RFP for either a two-step or “best value” selection method than this step must be completed.

Suppose the TRC is developing an RFP for a best value selection method. This method requires that the TRC evaluate the proposer’s qualifications, proposed cost, their project management approach, the proposed schedule and possibly the technical details for the project solution. These five primary criteria are listed and the TRC will rate each of these categories on a four-point Likert type scale, see Table 2. Other methods may be used to rank the importance of the primary criteria; Table 2 simply illustrates the example discussed in the Potter & Sanvido study.

Table 2

Level of Importance of Level 1 Criteria (Potter & Sanvido, 1995)

Criteria Category	0 Not Required	1 Minimal Requirement	2 Average Requirement	3 Strongly Required
Price			X	
Technical			X	
Qualifications				X
Schedule		X		
Project Management			X	

The rankings agreed to by the members of the TRC are then mathematically converted to a numerical weight for each of the five primary criteria. Table 3 illustrates the conversion of the rankings shown in Table 2.

Table 3

Level 1 Category Weighting (Potter & Sanvido, 1995)

Criteria Category	Total Weight
Price	20%
Technical	20%
Qualifications	30%
Schedule	10%
Project Management	20%
Total	100%

The weighting shown in Table 3 would change if the rankings of the primary categories were revised. The next step in the DBPS requires that the TRC develop a list of secondary criteria that is deemed necessary to evaluate the primary categories. A TRC is often challenged when developing the secondary criteria for many reasons. The school corporation experiences

turnover in personnel, there is a long period between projects, a different DCD is hired or project requirements differ enough to warrant a revised list of requirements. The DCD and members of the TRC will bring their varied experiences to the table to develop a list of criteria they deem important to the selecting a team for the project at hand. An example of supporting criteria that fall under the qualifications selection criteria is shown in Table 4. Once again a Likert scale is used to develop the importance of each of the secondary criteria.

Table 4

Level of Importance of Level 2 Criteria, Qualifications (Potter & Sanvido, 1995)

Qualifications

Criteria	0 Not Required	1 Minimal Requirement	2 Average Requirement	3 Strongly Required
Financial Stability			X	
Construction Experience			X	
Home Office Location		X		
Firm Capacity		X		
Current Workload			X	
Bonding Capacity			X	

After the TRC has agreed on the ranking of each of the secondary criteria a mathematical process can be used to convert this ranking to a weighted percentage as illustrated in Table 5.

The example in Table 5 shows that the secondary criteria are first assigned a weight within the primary criteria then, using the weighting shown in Table 3 for Qualifications (30%) are assigned a an overall project weighting for each of the supporting criteria.

Table 5

Weighting of Level 2 Criteria, Qualifications (Potter & Sanvido, 1995)

Criteria	Weight in Category	Weight to Total
Financial Stability	20%	6%
Construction Experience	20%	6%
Home Office Location	10%	3%
Firm Capacity	10%	3%
Current Workload	20%	6%
Bonding Capacity	20%	6%
Totals	100%	30%

It may be necessary to develop a list of supporting criteria for some of the secondary criteria. One example would be to develop a list of supporting criteria for the Financial Stability criteria item. A TRC may want to evaluate a proposer's credit rating, various financial ratios or the amount of cash they have on hand. The TRC would follow the steps used in the previous examples to develop a ranking for each of these supporting criteria. The ranking can then be mathematically converted to a weighted ratio first within the Financial Stability criteria then within the Qualifications criteria and finally a weighted percentage against the overall project. The level at which these rankings are published in the procurement documents is also determined by the TRC.

An example of the primary criteria and weighted percentages is shown in Table 6. The information contained in this table comes from one of the procurement documents used in this current study. This example illustrates the importance of the total project design to the selection committee. Thirty-five percent of the qualitative score comes from an evaluation of the Architectural and Site Design criteria and an additional twenty-five percent comes from an

evaluation of the Mechanical, Electrical and Plumbing Design criteria. The procurement document for this project included a list of supporting criteria used to evaluate the Architectural and Site Design category but the weighted percentages for these items were not published. The following is an example of some of the secondary evaluation criteria:

- “Adequacy of instructional spaces provided to meet the overall educational program for the school.”
- “Site Design; ease of operations and maintenance.”
- “Overall Building Design; Attractiveness/appeal of the design – is it appropriate for our community?”
- “Layout and organization of the floor plan.”

Without access to the weighting of each of the criteria the proposer will need to develop their submittals to provide the best possible solution for each of these criterion.

Table 6

Weighted Evaluation Criteria, DB Project, Indiana, South Adams School Corporation

Architectural & Site Design	35 possible points
Mechanical, Plumbing & Electrical Systems	25 possible points
Team Qualifications	20 possible points
Work Plan & Schedule	10 possible points
Intangibles/Interview/Reference	10 possible points

One method that can be used to evaluate multiple criteria is the fuzzy Delphi method (FDM). It provides a tool to establish criteria and weights for selecting the most qualified firm for a project (Manoliadis, Pantouvakis, & Christodoulou, 2009). The FDM is a combination of the fuzzy logic (FL) and the Delphi method (DM) and is employed to reduce the level of subjectivity in the criteria used to evaluate the different teams. It also provides a methodology to assign weighting to each of the criteria used in the selection process.

Another method that can be used to factor out personal bias would be to apply a Monte Carlo simulation. This approach facilitates an analysis of the criteria by assigning different weights to each of the evaluation criteria to observe how it affects the model (El Asmar, Hanna, Chang, & Russell, 2009).

The analytical hierarchy process (AHP) is another method used to evaluate a collection of criteria. This method utilizes a pair-wise comparison of each of the individual criteria to effectively generate the weight of each of the criteria. The result is a hierarchy that facilitates an understanding of the importance of each of the criteria items. The AHP can be used to assist in eliminating subjectivity from the selection process (Abudayyeh, Zidan, Yehia, & Randolph, 2007).

Methodology

Data Collection

The evaluation criteria were mined from RFQs and RFPs for K12 school projects located in different regions of the country. The submittal requirements and additional project information were also collected from the procurement documents.

A search of the internet for design build procurement documents was the primary method used to locate projects. This search found 26 design build school projects. The procurement documents collected included a mixture of RFQs and RFPs for various projects located across the country.

In an attempt to increase the sample size, each of the DBIA regional chapters was contacted and asked for project references for public school design build procurement documents and also to pass along this request to their membership. Additionally, every one of the design-

build firms listed in the 2009 DBIA membership directory was sent an email requesting project information. These efforts resulted in an additional four projects for a total of thirty projects.

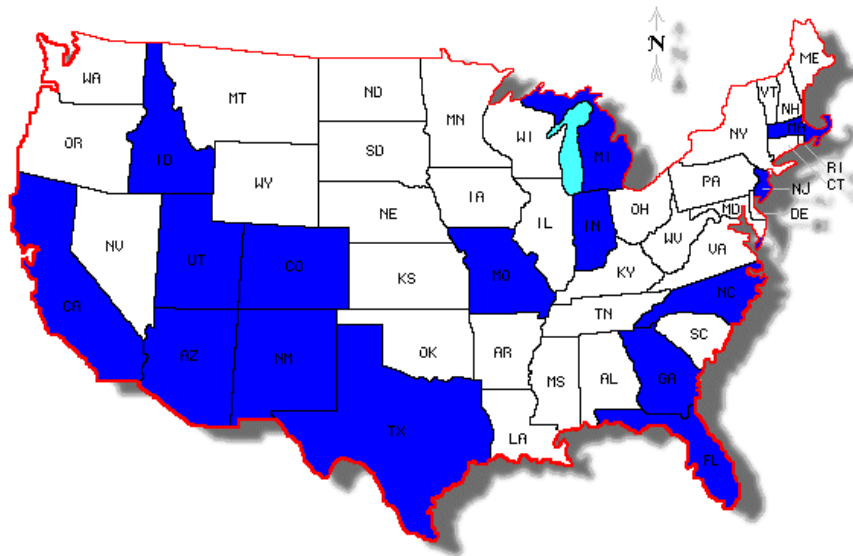


Figure 2. Project locations. Shaded states indicate project locations used in this study

Description of Data

The procurement documents represent a wide variety of projects from across the nation. Projects range from an energy efficient lighting upgrade in Missouri to a new high school in Detroit. Three projects are from the same owner in Washington D.C. and two projects from the same owner in Georgia were used to discover if an owner used the same format for their procurement documents for different projects. Figure 3 graphically illustrates the distribution of projects by state.

As previously mentioned there is a wide range of projects by size. Only eighteen of the procurement documents included the project budgets, the project budgets range from \$400,000 to over fifty-four million dollars for a total of over 290 million dollars worth of construction.

The first project used in this study was due in February 2003 and the last project used in this study was due on May 18, 2010. There were a total of thirty projects which produced a total of thirty-three different procurement documents. Two of the projects included the evaluation criteria for both the qualifications based selection criteria and the criteria used to evaluate the interview portion of the procurement process. For this study the evaluation of the qualifications criteria was performed independently from the criteria used for the interview phase. The Los Lunas project from New Mexico included the procurement documents for both stages of the two-step selection method. The RFQ for this project was evaluated independently from the evaluation of the criteria listed in the RFP.

A total of twelve RFQs were included in this study, four of which were used for qualifications based selection method. Nineteen RFPs were included in this study, three of which were used during the second stage of a two-step delivery process and the other sixteen were used in the single step “best value” selection method. The independent analysis of the interview stages for two of the projects completes the total count of procurement documents evaluated in this study to thirty-three. An additional breakdown by project and facility types is shown in Table 7.

Table 7

Project and Facility Types

Project Types	Count	Facility Types	Count
New Building	12	Elementary Schools	9
Renovation Only	5	Middle School	3
Addition Only	1	High School	7
Addition & Renovation	2	Sitework	2
Athletic Facilities	6	K-8	3
Electrical Upgrades	2	K-12	2
Plumbing Improvements	1	Support Facility	2
Technology Upgrades	1	Multiple Facilities	2

Organization of the Data

Each of the evaluation criteria found in the procurement documents were first classified by the following primary criteria: (1) Cost; (2) Project Management; (3) Qualifications; (4) Schedule; and (5) Technical. The supporting criteria were then identified and classified under one of the five primary criteria categories. The supporting criteria under the qualifications criteria were then organized under three classification; Proposer Information; Previous Performance; and Capabilities. The next step in this study cross-referenced the submittal requirements with the corresponding evaluation criteria. In some cases a particular submittal requirement was used in multiple categories of evaluation. When this occurred the submittal was assigned to all criteria it supported.

Not all of the submittal requirements listed in the procurement documents were used in this analysis. Some of the deliverables required from the DB teams are necessary for a complete package but performing a subjective analysis would devalue the results because the items were

purely administrative (i.e. Table of Contents, inclusion of forms, etc...). Also some items simply could not be cross-referenced to one of the evaluation criteria. If a submission criteria had multiple options for a similar submittal then only one of the options was included in the analysis. An example of this type of item is, “If a corporation, provide corporate information, If a Partnership, provide partnership information, etc...”. The next step in the analysis was to determine the subjectivity of the evaluation criteria.

Determining Level of Subjectivity

An item can be considered either objective or subjective but unfortunately it is not a simple black and white determination. There are many shades of gray that cloud the level of subjectivity. In addition, the level of subjectivity can vary from different points of view. In this study a simple method was used to determine the level of subjectivity. First, instead of looking at the evaluation criteria for levels of subjectivity this study examined the supporting documentation and used these items to develop a subjective factor for each item. Two questions were asked for each of the submittal requirements. The first question asked if the submittal included real data and the second question asked if a narrative or description was required.

The method used to determine if an item was a data submission asked if the supplied information was in a non-narrative form. In other words, “could a mathematical process could be used to rate the submission?” Other methods used to determine if an item was a data submission was if it was simply a pass/fail test or exceeded a given threshold.

Information supplied through narrative form was considered fully subjective because interpretation of written material can vary from person to person. If an item asked the teams to

describe a process or the qualifications of an individual then these types of responses would be considered subjective.

A hybrid of requirements asked the preparer to submit information which required both data submissions and narrative information. The types of questions asked the team to submit an organizational chart along with a description of duties of each of the team members. Another example asked for the resume of a key individual along with a description of their qualifications. The answers to the two questions determined the subjective index for that item. If an item was only a data submission then it was assign a subjective index of zero. If an item was only a narrative then it was assigned a value of one and if a hybrid was encountered then it was assigned a subjective index of 0.5.

Compiling the Data

With all the submittal requirements cross-referenced to the corresponding evaluation criteria and after each evaluation criteria has been categorized under the five primary evaluation criteria then the final step in the subjective analysis was to calculate the level of subjectivity for each of the primary criteria. A total number of submittal requirements and the total sum of the subjective index for each of the submittals were used to develop the percentage of subjectivity for each of the evaluation criteria. To develop a percentage of subjectivity for each of the level 1 categories the total count and sum of subjective index for each the selection criteria assigned to a particular level 1 category were used. The levels of subjectivity for each level 1 category are shown in Appendix C. This information was organized by source document in an attempt to identify a subjective trend between source documents.

Developing a Guide for Selection Committees

The end goal of this study was to develop a more comprehensive list of evaluation criteria and corresponding submittal requirements for selection committees to use when preparing the procurement documents for their project. To accomplish this all of the evaluation criteria and corresponding submittal requirements were collected and sorted into the five primary categories used as convention for this study. Under each of the five primary categories the submittal requirements were further classified under the supporting criteria.

Findings

As anticipated the procurement documents contained a wide variety of selection criteria and submittal requirements. There were some commonalities found between the documents but a great diversity was also discovered. The levels of detail required from proposers ranged from vague to very specific and detailed. Some of the documents indicated methods of scoring the evaluation criteria and a wide variety of selection methods were also found. The following findings, organized by primary criteria, were based on observation during the course of the study of each of the procurements documents. Appendix B shows the distribution of the evaluation criteria sorted by primary criteria.

Qualifications Criteria

Some of the more common requirements between the procurement documents were found in the evaluation of the team as a whole and the sum of its parts. Many of the documents required the teams to submit organizational charts showing the composition of the team and the duties of each of the members. In addition most projects required the submission of the key individuals that will be working on the project and their qualifications. Team experience and

past performance were also common criteria. Every project used in this study required the preparers to submit a list of recent projects and most required the list to include design-build projects. Financial stability was also a common thread among the documents. There was a variety of submittal requirements used to evaluate financial stability which included bank references, financial statements and specific indicators (i.e. Working Capital Ratio, Profitability, and Return on Assets Ratio). Another commonality between the documents was the requirement to submit proof of being able to bond the project. Safety records, as exhibited by the company's experience modifier rating (EMR), and insurance coverage were also required submittals in many of the procurement documents. To determine if a team can perform on their project some of the procurement documents required that the proposer submit their current and project workload. There were other requirements but these were not found in the majority of the documents. As a result of the study of the submittal requirements the following list of secondary criteria was developed:

1. Team Organization
2. Location
3. Key Staff
4. Licensure and Professional Registrations
5. Company History
6. Project Experience
7. Design/Build Experience
8. Budget Compliance
9. Schedule Compliance
10. Legal Issues
11. Safety Record
12. Local/DBE Usage
13. Apprenticeship Training
14. Financial Information

15. Bonding Capacity
16. Willingness to Sign Contract Agreement
17. Experience with Local Conditions and Regulatory Officials
18. Workload
19. Insurance Requirements
20. Return of Savings

Some of the more unique categories worthy of note include Return of Savings, Budget and Schedule Compliance. One project required the teams to describe how any savings discovered during the course of the project would be returned to the owner. This owner was proactively seeking a method to ensure any savings realized would be returned to them either in part or as a whole. Not establishing this procedure during the procurement process makes it difficult for the owner to later establish this requirement.

Two other interesting categories were Budget and Schedule Compliance. In theory these would be good indicators of a team's performance, but unless provisions are made to allow the teams to explain extenuating circumstances then these could be a detriment for any of the teams that encountered severe weather, poor soils or some other unforeseen condition during construction. These two items specifically address the proposed benefits of the design-build delivery method.

One last interesting find was the use of a miscellaneous adjustment in two of the projects. One project allowed fifteen percent and another allowed ten percent of the total score to be based on non-substantiated criteria that was completely open to interpretation. These categories are perfect opportunities for selection committees to promote one team over another. As shown in an earlier example a five point swing gives one team more than a million dollar advantage on a twenty million dollar project. One last criteria of note was organization and presentation of

proposal. One project based ten percent of the total score on the quality of the proposal documents.

The qualifications category contained the largest variety of selection criteria and submittal requirements. This is because almost all of the documents used in this study included some form of selection criteria based on a team's qualifications. Picking the best team to work with is the ultimate goal for the selection committee.

Project Management Criteria

All but two of the procurement documents required the proposers to submit their approach for either the design phase or the construction or both. In addition other categories of project administration were discovered. These include subcontractor selection, cost estimating, quality assurance and control and extended maintenance.

The project approach proposed by a team included not only the construction of the project but also included the design phase. Owner's typically wanted to evaluate the quality control approach used by a team during the design phase. Quality control methods used during the construction phase are also important to an owner. Safety procedures, field supervision, and reporting measures were also required inclusions in the submittals. Owners want to know how the team will work near an occupied facility and address issues like excessive noise and utility shut-downs.

A second category found in the project management category was the team's approach to utilizing local and DBE firms. Many localities have established guidelines to promote the use of local and DBE firms and owners need to understand how a team will meet these guidelines.

How a team performs its cost estimating through the project was required on one project. This submittal specifically required the preparer describe their willingness to commit to the estimate provided. Another category discovered in this study was the Extended Maintenance Plan. This would be a necessary inclusion if a project required the team to provide this service. A selection committee needs to be able to gauge the level of performance they expect to receive during the maintenance period.

Cost Criteria

This selection criterion was used by selection committees to determine the lowest price proposal. How this cost proposal was used varied between projects but was most often it was used in conjunction with the score of the qualitative portion of the proposal. One project picked the lowest cost proposal among the teams that all scored at or above a threshold on their qualitative proposal. Another project awarded points based on the lowest to highest cost proposal (5 points for low, 4 points for 2nd, etc...). Most often the selection method employed by public agencies is governed by state and/or local guidelines.

Schedule Criteria

This category is used to evaluate teams in respect to the project completion date. Some of the submittals simply required for a team to produce a schedule indicating completion before a given deadline. Other procurement documents asked for the duration of the project. The schedule for the design phase was also a required submittal. This selection criterion becomes a critical selection factor if a project is under a particularly tight timeline. For these projects, the start of the school year is a critical date.

Technical Criteria

This category is often used by selection committees to be able to choose a design that best satisfies their need. This category not only requires teams to submit drawings but material selection, equipment manufacturers and even color choices. Submittals can be grouped under two level 2 categories; design and materials. Technical submissions can also require teams to provide detail to show how their design will function with existing systems. One project used in this study was expanding an existing computer network. This owner needed to make sure that system components and software would work with existing network. Another project was for the installation of a ground-mounted photovoltaic system. The selection committee needed the design to determine if the power generated from this installation met the established guidelines for this project. Material specifications also become important to a selection committee for them to be able to gauge the quality of the finished project. Of all the selection categories, the technical category conveys a physical design for a committee to evaluate.

Proposal Organization

The proposal organization requirements varied from a rigid list of requirements to no established organization. One project in this study listed submittal requirements in various places in the procurement document and did not include a summary of all the required submittals. This creates an opportunity for a proposer to miss an item which unbalances the selection process. A few of the procurement documents did not specify a structure for the proposal. This could delay the selection process because of the inconsistency between the documents makes an “apples-to-apples” analysis cumbersome. Most of the procurement documents allowed the proposers to include additional information that would benefit the owner and enhance the project.

Conclusion

As expected, the subjectivity of the selection criteria listed in design build procurement documents for public school projects ranged from completely objective to completely subjective. This study was initiated with the intent to find less subjective ways for criteria to be evaluated to lessen the impact of personal bias in the selection process. If a proposer is perceived as having an “in” with an owner this could lessen the field of competition because proposers will not want to go to the expense of preparing a proposal. As a result of this study several ideas have been generated to improve the selection of a design build team for a project.

If a member of a selection committee comes to the table with a personal bias towards one of the proposers then they are not performing the due diligence of their appointment. Any attempt to remove personal bias by limiting the subjectivity of the selection criteria to negate the bias will only harm the integrity of the selection process. The only defense against personal bias would be to assemble a selection committee with individuals that have a wide variety of experience levels. Inviting members of the public to join the committee will bring a new perspective to the selection process. School officials representing the district and the facility will bring a sense of ownership for the project. The DCD hired by the district will also try to influence the process to maintain a degree of fair play. This cross-section of selection committee members should be sufficient to offset any individual’s personal agenda.

The DCD is hired by the owner to facilitate the entire selection process. Their duties include facilitating the development of the procurement documents. They will often present the initial format of the procurement documents and specific selection criteria to the TRC. These early documents are usually edited versions of procurement documents used by the DCD on previous projects. To an un-experienced member of the TRC these documents will appear to

contain a comprehensive list of selection criteria and submittal requirements. Unless committee members are familiar with what documentation is needed to best evaluate selection criteria and take the time to study the preliminary procurement documents supplied by the DCD the final form of the document will vary little from the initial copy. If a DCD has extensive experience with the design/build selection process and has incorporated lessons learned into their procurement documents than this scenario is not a threat to the integrity of the selection process. However, if a DCD does not incorporate project experiences into their procurement documents or has little experience than this could prove harmful to the selection process if the preliminary procurement documents are simply “rubber-stamped” by the TRC. The best solution to avoid this possibility is to educate the members of the TRC on the criteria used to select design/build teams and the best submittals to use to evaluate these criteria. Unfortunately time is at a premium for most of the members of a TRC so an extensive training session is usually not a viable option. This research recommends that a guide organized by both primary criteria with a listing of supporting criteria and what information is needed from the proposers to best evaluate these criteria. This guide needs to include a comprehensive listing of criteria for committee members to review to avoid missing a key element that was overlooked in the preliminary procurement documents prepared by the DCD. Another consideration is to keep this guide brief to avoid losing the attention of the reader. This guide is only intended to facilitate development of the selection criteria and applicable submittal requirements. An initial guide has been prepared during this research and can be found in Attachment D of this report.

Research Opportunities

Evaluation of the selection process used to select design build teams can be enhanced by direct involvement with the selection process through the entire process. Being present at committee inception, through preparation of the procurement documents, evaluating the submissions and final team selection would add to body of knowledge to better the selection process.

Analyzing the selection process using the experience level and background of the DCD was suggested earlier in this report as another opportunity for additional research.

Bibliography

- Abramson, P. (2009). *2009 School Construction Report*. School Planning & Management Magazine.
- Abudayyeh, O., Zidan, S. J., Yehia, S., & Randolph, D. (2007, April). Hybrid Prequalification-Based, Innovative Contracting Model Using AHP. *Journal of Management in Engineering* , 88-96.
- DBIA. (n.d.). *What is Design Build?* Retrieved February 10, 2010, from DBIA: www.dbia.org
- El Asmar, M., Hanna, A. S., Chang, C.-K., & Russell, J. S. (2009). Alliance Team Selection for Infrastructure Projects Using Monte Carlo Simulation. *Construction Research Congress* (pp. 1308-1317). ASCE.
- Gransberg, D. D., & Barton, R. F. (2007, April). Analysis of Federal Design-Build Request for Proposal Evaluation Criteria. *Journal of Management in Engineering* , 105-111.
- Halpern, M. (2008, March 20). *Local News*. Retrieved February 10, 2010, from WSLs 10: http://www2.wsls.com/sls/news/local/article/deadly_construction_accident/7565/
- Konchar, M., & Sanvido, V. (1998, November/December). Comparison of U.S. Project Delivery Systems. *Journal of Construction Engineering and Management* , 435-444.
- Lopez del Puerto, C., Gransberg, D. D., & Shane, J. S. (2008, January). Comparative Analysis of Owner Goals for Design/Build Projects. *Journal of Management in Engineering* , 32-39.
- Manoliadis, O. G., Pantouvakis, J.-P., & Christodoulou, S. E. (2009, April). Improving Qualifications-Based Selection by use of the Fuzzy Delphi Method. *Construction Management and Economics* , 373-384.

Minsky, M. (1985). *The Society of Mind*. New York: Simon & Schuster Paperbacks.

Molenaar, K. R., Songer, A. D., & Barash, M. (1999, March/April). Public-Sector Design/Build Evolution and Performance. *Journal of Management in Engineering* , 54-62.

Palaneeswaran, E., & Kumaraswamy, M. M. (2000, September/October). Contractor Selection for Design/Build Projects. *Journal of Construction Engineering and Management* , 331-339.

Potter, K. J., & Sanvido, V. (1995, May/June). Implementing a Design/Build Prequalification System. *Journal of Management in Engineering* , 30-34.

Schaufelberger, J. E. (2000). Delivering Quality School Projects. *Construction Congress VI* (pp. 603-610). Orlando: Construction Congress.

Songer, A. D., & Molenaar, K. R. (1997, March). Project Characteristics for Successful Public-Sector Design-Build. *Journal of Construction Engineering and Management* , 34-40.

Songer, A. D., & Molenaar, K. R. (1996, November/December). Selecting Design-Build: Public and Private Sector Owner Attitudes. *Journal of Management in Engineering* , 47-53.

Songer, A. D., & Molenaar, K. R. (1996, November/December). Selecting Design-Build: Public and Private Sector Owner Attitudes. *Journal of Management in Engineering* , 47-53.

Songer, A. D., Ibbs, W., & Napier, T. R. (1994). Process Model for Public Sector Design-Build Planning. *Journal of Construction Engineering and Management* , 120 (4), 857-874.

Songer, A. D., Ibbs, W., Garrett, J. H., Napier, T. R., & Stumpf, A. L. (1992). Knowledge-Based Advisory System For Public-Sector Design-Build. *Journal of Computing in Civil Engineering* , 6 (4), 456-471.

**APPENDIX A
PROJECT LISTING**

A1

#	Owner	Project Description	State	Budget	Project Type	Facility Type	Source of Criteria	Method of Selection	Proposal Due Date
AZ01	Fountain Hills United School District	New Concession Building	AZ	\$ 400,000	Athletic Facilities	High School	RFQ	Qualifications & Interview	March 12, 2008
AZ02	Fowler Elementary School District	New Child Care Facility	AZ	\$ 4,300,000	New Building	Elementary School	RFQ	Qualifications Only	February 20, 2007
AZ03	Toltec Elementary School District #22	Upgrade & Expand Computer Network	AZ	Not Published	Technology Upgrades	Elementary School	RFP	Best Value	TBD
CA01	Washington Unified School District	New Photovoltaic System	CA	Not Published	Electrical	Support Facility	RFP	Best Value	January 15, 2010
CO01	Denver Public Schools	New K-12 Building	CO	\$ 10,000,000	New Building	K-12	RFP	Best Value	December 10, 2009
CO02	Colorado Springs School District #11	Replace Swimming Pool Piping @ Wasson HS	CO	Not Published	Plumbing	High School	RFP	Best Value	April 29, 2010
DC01	DC Office of Public Education Facilities Modernization	Athletic Field Improvements	DC	Not Published	Athletic Facilities	Elementary School	RFP	Best Value	May 15, 2009
DC02	DC Office of Public Education Facilities Modernization	Phase 1 Classroom Modernizations	DC	Not Published	Renovation Only	Multiple	RFP	Best Value	March 5, 2010
DC03	DC Office of Public Education Facilities Modernization	Renovations to Eastern Sr HS	DC	\$ 45,000,000	Renovation Only	High School	RFP	Best Value	December 19, 2008
FL01	Seminole County Public Schools	Lake Mary HS Swimming Facility	FL	\$ 1,900,000	Athletic Facilities	High School	RFP	Best Value	January 17, 2008
FL02	The School Board of Orange County Florida	Addition & Renovation to Chickasaw Elem	FL	Not Published	Addition & Renovation	Elementary School	RFQ	Qualifications & Interview	December 3, 2008
FL03	School District of Osceola County	White Cloud HS PE/Pulti-Purpose Complex	FL	\$ 900,000	Athletic Facilities	High School	RFQ	Two-Step	November 25, 2005
GA01	Bibb County School District	District Wide Athletic Fields	GA	\$ 12,500,000	Athletic Facilities	Sitework	RFP	Best Value	November 19, 2009
GA02	Dekalb County Board of Education	Chestnut Charter Elementary School	GA	Not Published	Renovation Only	Elementary School	RFP	Best Value	April 16, 2009
GA03	Brunswick and Glynn County Development Authority	Golden Isles Career Academy	GA	\$ 14,000,000	New Building	Elementary School	RFQ	Qualifications Only	October 12, 2007
GA04	Dekalb County Board of Education	McLendon Elementary School Renovations	GA	Not Published	Renovation Only	Elementary School	RFP	Best Value	October 15, 2009
ID01	Vision Charter School Trustees	Vision Charter School	ID	\$ 6,000,000	New Building	K-12	RFP	Best Value	January 23, 2009
IN01	Hamilton Southeastern Schools	New Jr HS & Renovation of Exist MS	IN	\$ 33,000,000	Addition & Renovation	Middle School	RFQ	Two-Step	December 15, 2009
IN02	South Adams Community Schools	New PreK-8th Grade Bldg	IN	\$ 20,000,000	New Building	K-8	RFP	Two-Step	December 10, 2009
MA01	City of Newton	Add Classrooms at Oak Hill MS	MA	Not Published	Addition Only	Middle School	RFP	Best Value	May 3, 2010
MI01	Detroit Public School	Martin Luther King Jr. Senior HS	MI	\$ 54,469,031	New Building	High School	RFP	Best Value	April 28, 2010
MO01	Cavalry Lutheran High School Board of Directors	Cavalry Lutheran High School (Initial Phase)	MO	\$ 800,000	New Building	High School	RFQ	Two-Step	November 4, 2009
MO02	Sherwood Cass R VIII School District	Energy Efficient Lighting Upgrade	MO	Not Published	Electrical	Multiple	RFQ	Two-Step	May 18, 2010
NC01	Charlotte-Mecklenburg Schools	Pinewood Replacement Elementary School	NC	Not Published	New Building	Elementary School	RFP	Two-Step	February 23, 2003
NJ01	New Jersey Schools Development Authority	New Three Story PreK-8	NJ	\$ 40,000,000	New Building	K-8	RFQ	Two-Step	February 10, 2009
NM01	Albuquerque Public Schools	New Middle School	NM	\$ 26,300,000	New Building	Middle School	RFQ	Two-Step	April 3, 2007
NM02	State of New Mexico	Los Lunas Substance Abuse Facility	NM	\$ 7,927,443	New Building	Support Facility	RFQ	Two-Step	May 29, 2009
NM03	State of New Mexico	Los Lunas Substance Abuse Facility					RFP		
TX01	Hallsville Independent School District	Softball Field House & Concession Stand	TX	Not Published	Athletic Facilities	Sitework	RFQ	Two-Step	October 12, 2009
TX02	Fabens Independent School District	O'Donnell Elementary Renovation	TX	\$ 3,100,000	Renovation Only	Elementary School	RFP	Best Value	January 22, 2010
UT01	Quail Run Primary School Foundation	New Charter School	UT	\$ 10,000,000	New Building	K-8	RFP	Best Value	June 19, 2009

B1

The diagram shows a 3D rectangular block. The front face is a horizontal rectangle labeled "Proposer Information". The top face is a rectangle divided into five parallel, tilted sections. From left to right, these sections are labeled: "Team Organization", "Location", "Key Staff", "Licensure & Registrations", and "Company History".

[illegible][illegible]

B2

B3

B4

B5

The diagram consists of a large orange parallelogram. Inside this parallelogram, there is a smaller orange rectangle at the bottom. The word "Cost" is written in black text inside this rectangle. Above the rectangle, the parallelogram is divided into two sections by a diagonal line. The left section is labeled "Fee Structure" and the right section is labeled "Cost Proposal".

Technical

[illegible][illegible][illegible][illegible]

APPENDIX C
ANALYSIS OF CRITERIA SUBJECTIVITY

C1

Subjective Analysis of RFQ						
Qualifications Based Selection						
#	Project	Cost	Project Management	Qualifications	Schedule	Technical
AZ01	AZ Fountain Hills	N/A	N/A	40.74	N/A	N/A
AZ02	AZ Fowler	N/A	N/A	57.14	N/A	N/A
FL02	FL Orange County	N/A	28.13	7.14	N/A	N/A
GA03	GA Golden Isles Career Academy	N/A	N/A	50.00	N/A	N/A
Average		N/A	28.13	38.76	N/A	N/A

Subjective Analysis of Interview						
Qualifications Based Selection						
#	Project	Cost	Project Management	Qualifications	Schedule	Technical
AZ01i	AZ Fountain Hills	N/A	N/A	100.00	N/A	N/A
FL02i	FL Orange County	75.00	100.00	87.50	100.00	N/A
Average		75.00	100.00	93.75	100.00	N/A

Subjective Analysis of RFQ						
Two-Step Selection Method						
#	Project	Cost	Project Management	Qualifications	Schedule	Technical
NJ01	NJ Elliot St	N/A	N/A	35.29	N/A	N/A
NM01	NM Albuquerque New Middle School	N/A	N/A	33.33	N/A	N/A
NM02	NM Los Lunas Ph1	N/A	66.67	36.36	N/A	N/A
TX01	TX Hallsville ISD	N/A	N/A	73.08	N/A	N/A
AZ01	AZ Fountain Hills	N/A	N/A	40.74	N/A	N/A
AZ02	AZ Fowler	N/A	N/A	57.14	N/A	N/A
FL02	FL Orange County	N/A	28.13	7.14	N/A	N/A
GA03	GA Golden Isles Career Academy	N/A	N/A	50.00	N/A	N/A
Average		N/A	47.40	41.64	N/A	N/A

APPENDIX C
ANALYSIS OF CRITERIA SUBJECTIVITY

C2

Subjective Analysis of RFP						
Two-Step Selection Method						
#	Project	Cost	Project Management	Qualifications	Schedule	Technical
IN02	IN South Adams	0.00	38.89	50.00	N/A	24.81
NC01	NC RFP Charlotte Meckelburg Schools	0.00	0.00	N/A	100.00	25.00
NM03	NM Los Lunas Ph2	0.00	85.71	0.00	N/A	66.67

Summary	0.00	31.15	16.67	50.00	29.12
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Subjective Analysis of RFP						
Best Value Selection Method						
#	Project	Cost	Project Management	Qualifications	Schedule	Technical
AZ03	AZ Toltec	0.00	10.00	50.00	N/A	5.00
CA01	CA WUSD	0.00	91.67	27.97	N/A	0.00
CO01	CO Stapleton 3	0.00	80.00	75.00	N/A	N/A
CO02	CO Wasson	0.00	N/A	100.00	N/A	0.00
DC01	DC Athletic Facilities	0.00	75.00	34.62	0.00	N/A
DC02	DC Classroom Modernizations	0.00	66.67	40.00	0.00	N/A
DC03	DC Eastern HS	0.00	75.00	37.50	0.00	N/A
FL01	FL Lake Mary HS Swimming Facility	0.00	100.00	44.12	N/A	N/A
GA01	GA Bibb County Athletic Fields	0.00	75.00	44.44	100.00	N/A
GA02	GA Chestnut Elementary	0.00	50.00	28.13	N/A	100.00
GA04	GA McLendon Elementary	0.00	50.00	20.37	N/A	50.00
ID01	ID Vision Charter School	0.00	100.00	33.33	100.00	100.00
MA01	MA Oak Hill MS	N/A	N/A	0.00	N/A	50.00
MI01	MI MLK HS	N/A	64.29	86.36	N/A	N/A
TX02	TX ODonnell	N/A	N/A	30.88	N/A	N/A
UT01	UT Quail Run	0.00	83.33	N/A	100.00	100.00

Summary	0.00	70.44	34.79	100.00	80.00
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GUIDE FOR SELECTION COMMITTEES**Introduction**

This guideline was developed for selection committees to use when preparing the procurement documents for their design/build project. This information contained in this guide came from a study of various design/build public school projects. This guide is organized to conform to federal guidelines which promote the use of the two step selection method for selecting design/build teams for public projects. The two step method involves an initial screening of proposers to reduce the field to a manageable list to the three to five best qualified proposers to bid on the project. This first step is called the Request for Qualifications (RFQ) stage. The second step, called the Request for Proposals (RFP) stage, is the period the proposers prepare and present a design solution for the project. The cost proposal is usually submitted in a separate sealed envelope during this step. The design solutions are evaluated and used in combination with the cost proposal to select the best proposer to work on the project. However, other methods can be used by public agencies which include the “best value” and the “best qualified” selection methods. The “best value” selection method uses a single step and requires proposers to submit their qualifications, design solution and cost information in a single packet. The “best qualified” selection method selects a team solely on their qualifications. The information contained in this guide will prove useful to any selection committee no matter what selection method is chosen.

In addition, even though the information contained in this guide was found during a study of public design/build school projects, the selection criteria and suggested submittals could prove useful to anyone that is tasked to select a design/build team.

GUIDE FOR SELECTION COMMITTEES**Request for Qualifications**

The ultimate goal of this phase is to evaluate the past performance of the proposers to determine if they are qualified to lead the project. Evaluating the qualifications of a proposer requires a selection committee to assign a qualitative score based on review of mostly subjective submittal requirements. To facilitate the process the following selection categories and related submittal requirements are listed below.

Evaluation of the Proposer

- Team Organization: This criterion can be used as a framework to develop an understanding of the experience level of each of the proposers and the experience of the key individuals that will be assigned to work on the project. If a proposer is a joint venture then the submittals need to identify the roles of each of the firms involved.
- Evaluation of the design/build entity includes identifying the willingness of the proposer to enter into a contract. Have the proposer include a statement to this effect.
- The proposer needs to disclose any and all current legal issues to include any recent judgments. Unresolved litigation issues need to be studied to determine if these issues could impact the operations of the proposer or the ability of the proposer to enter into a contract. Have the proposer list all litigation, claims and liens.
- Have the proposer prepare an organizational chart which identifies the roles of the different firms, and the key individuals that will be directly involved in the project. These include; Primary point of contact, lead design professional, construction project manager, key design consultants and the construction field superintendent. Other individuals may be added as project requirements dictate.
- The proposer's ability to maintain budget and schedule compliance needs to be evaluated. Proposers should be required to include budget information for the projects used in the reference list. To evaluate budget compliance the submittal should compare the initial budget versus the final project cost. Any difference needs to be quantified and explained.
- The proposer needs to include the procedure that will be used to return cost savings as a result of change orders or value engineering efforts.

GUIDE FOR SELECTION COMMITTEES**Evaluation of Key Staff**

- Resumes for these individuals need to specifically identify project related experience and design/build experience.
- The resumes should identify the licensure and current registrations held by each of the individuals.

Evaluation of Design Professional

- References from the design team should include related projects by type and design/build projects. These submittals should include pictures and details of the completed projects so the selection committee can better evaluate the designer's capabilities.
- The design team needs to submit proof that they can meet/exceed the insurance requirements for the project. This includes errors and omissions coverage.
- The design professional will need to demonstrate experience working in the specific locality of the project.

Evaluation of the Construction Professionals

- Project references which are arranged by project type and design/build projects. This information needs to include the specific role of the construction team in each of the projects and the contract amount of the projects. These projects should be recent, last five years, and be approximately the same size as the proposed project. This will demonstrate the proposer's ability to build the project.
- A construction team's safety record for the past three years can be simply evaluated by having the proposer submit their current EMR. However the proposer should also submit a safety plan which specifically identifies the risks associated with the project. If the facility is occupied during construction then the proposer will need to include protection of the public in this plan.
- The financial capabilities of a construction team need to be evaluated to determine if the proposer has the necessary assets to complete the project. Bank references and financial statements can be used to verify if the proposer will have sufficient cash flow to complete the project. Proposers need to submit their bonding capacity structured to include total work under contract, not just bonded work, and total bonding capacity.
- The construction team needs to submit proof that they can meet/exceed the insurance requirements for the project. This includes liability and workers compensation coverage. If a project requires specific coverage (e.g. work near a railroad), then this needs to be included in the submittal.

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- Current workload also needs to be included in the analysis. This can be evaluated by reviewing the organizational chart to determine if the proposer has included adequate resources to staff the project. Another indicator of being able to service the project is the distance from the servicing office to the project site. If a proposer does not indicate that they will maintain a local presence then this should be included in the evaluation.
- Apprenticeship training may be a requirement of the project owner. Vocational schools will often require the use of apprentices on their projects. The proposer needs to identify a plan to include the required ratio of apprentices to craftsmen.
- To demonstrate a commitment to utilizing local and disadvantaged business enterprises (L/DBE) the proposer needs to submit documentation that illustrates their approach to recruiting, mentoring and assisting the L/DBE contractors to be involved on their projects.
- Depending on project requirements it may be necessary for the proposer to identify the primary subcontractors that are involved on the project. These subcontractors should be listed on the organization chart. If the subcontractors have yet to be determined then a list of proposed subcontractors should suffice to evaluate the potential of the proposer.

Request for Proposals

As a result of the first step, the list of proposers has been narrowed to a manageable list of three to five teams. There is no need to require the proposers to duplicate the submittals required during the first step. During this step the selection committee is evaluating the specific design and construction approaches and the cost proposals for the project. Because there are a wide variety of project types, this section will only list the general approach best used under each category.

Project Management

This criterion allows the proposer to demonstrate an understanding of the project, specific site conditions and any other unique project requirements. There are two parts to this criterion. The first is the approach used by the proposer during the design phase and then the approach used during the construction phase.

GUIDE FOR SELECTION COMMITTEES**Design Phase Management**

- To evaluate a proposer the submittal needs to include a design schedule. This schedule needs to identify critical activities to include necessary reviews by local building officials, interviewing specific user groups and approval of the final design by the owner.
- This schedule should include periodic construction estimates to ensure compliance with the budget.
- The proposer needs to identify their approach to interfacing the design with existing facilities. This includes material and manufacturer selections that will work with existing systems.
- The proposer's approach to design quality during the design phase needs to be described. Adequate code review could reduce costly change orders.
- The role of the supporting cast of design consultants needs to be identified.

Construction Phase Management

- The subcontractor selection process needs to be identified to ensure competition occurs for the various subcontracts.
- If phased bidding is required to maintain schedule than the proposer needs to demonstrate the procedures they will use to maintain the schedule.
- The proposer needs to identify specific quality control methods employed during construction. This includes material testing and ensuring the products used in the project meet the specifications.
- Site specific safety procedures need to reinforce previous submissions that demonstrate the proposers overall approach to safety.

Cost Estimating Phase

- This phase actually begins during the design phase. The construction professional will usually perform the construction review estimates. The proposer should be required to submit sample estimates and demonstrate the accuracy of their estimating process.

Local/DBE Utilization Plan

- A project specific L/DBE plan needs to be submitted by the proposer. This should include provisions used to recruit firms to be involved with the project. Anticipated goals should be stated.

GUIDE FOR SELECTION COMMITTEES**Extended Maintenance Phase**

- If the project requires an extended maintenance agreement then the proposer needs to include their approach to satisfy these requirements.

Cost Proposal

- This criterion is most often used to determine the lowest price proposal for the project. Typically the cost proposal is submitted separately from the qualitative proposal and local rules govern how these two items are used to select the design/build team for the project.

Schedule Performance

- The proposer needs to submit documentation to illustrate compliance with the project schedule. Usually some form of a schedule is required and evaluated to ensure it agrees with the stipulated completion requirements listed in the procurement documents.

Technical Approach

This criterion will vary as much as the project types vary. However, evaluating the technical approach to the project can also be the most challenging. Evaluating a project design can be mostly a subjective opinion so a structured approach to the evaluation of the design needs to be predetermined.

Design Submittals

- Keep in mind that these are costly to produce so limit the requirements to the bare necessities. Floor plans and building elevations should suffice in most instances.
- If the project revolves around specific systems than the proposed system performance should be included as a submittal.

GUIDE FOR SELECTION COMMITTEES**Material Submittals**

- Ensuring the proposed materials will work with existing systems can be critical to project success. If this is an issue, require the proposer to demonstrate that the materials are compatible with existing systems.
- Maintenance, durability and aesthetics can also be significant factors in selecting a design. Require the proposer to list the anticipated materials so that maintenance and durability can be evaluated. Color charts and samples can be used to evaluate the aesthetics.

Proposal Organization

- Avoid unclear submittal requirements. Identify the important criteria to be used to select a proposer and clearly define what is to be included in the submittal.
- Ensure proposals comply with local laws and guidelines. Procurement documents that do not adhere to regulations invite post selection challenges from losing proposers.
- Keep submittal requirements in one section of the procurement documents. Requirements that are scattered throughout the procurement document open the possibility that a proposer will miss an item.